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Early Cenozoic Fluvial Deposits of the Renova Formation in SW Montana: Links to Southern Nevada and Utah?

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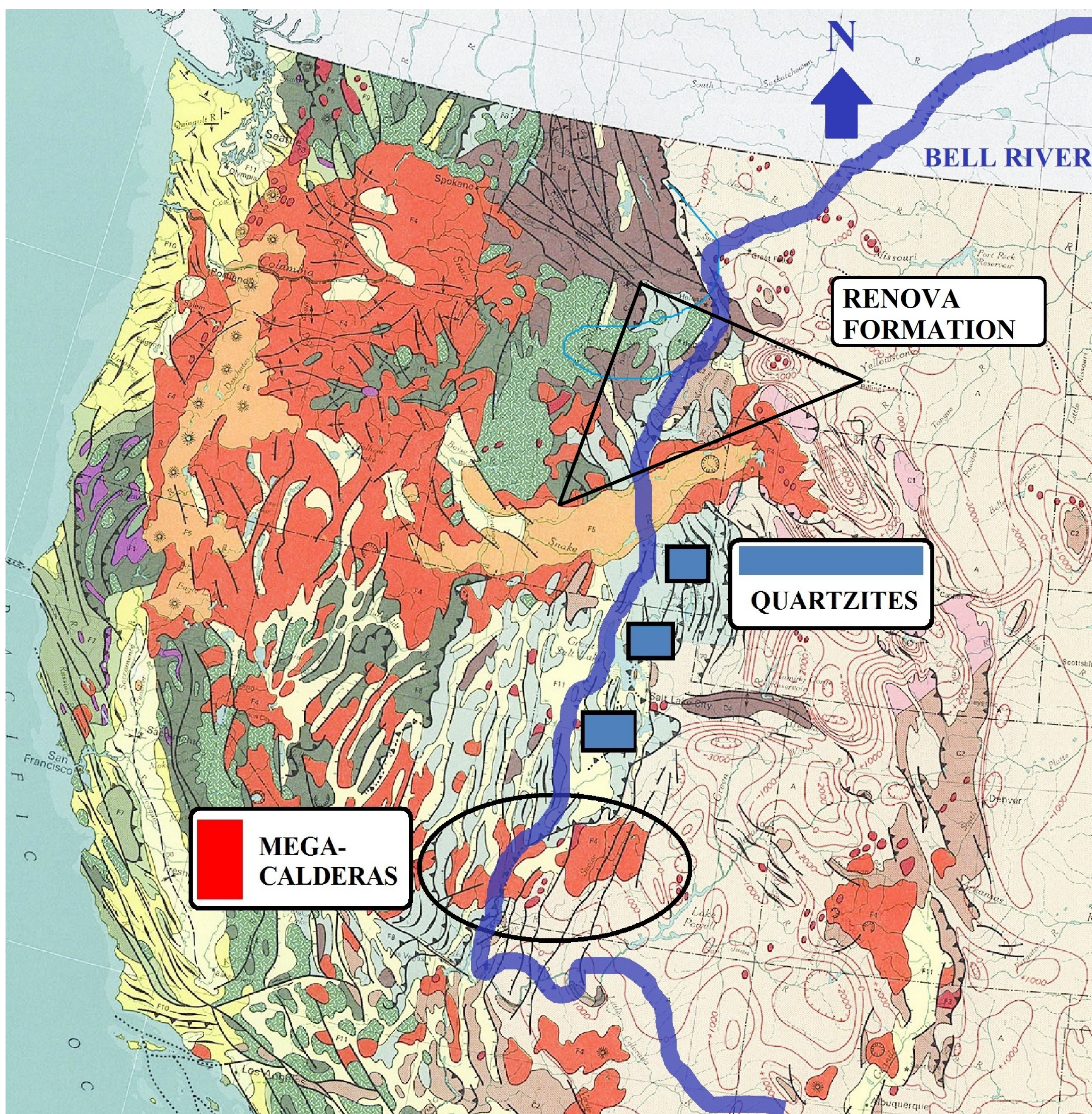
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RENOVA FORMATION COMPOSITION:



The Renova Formation in SW Montana is an unconsolidated geological unit that was deposited during the Cenozoic. It is predominantly comprised of fluvially-reworked and degraded volcanic ash.

This model proposes that the origin of the Renova Formation has been sourced from mega-calderas in southern Utah.



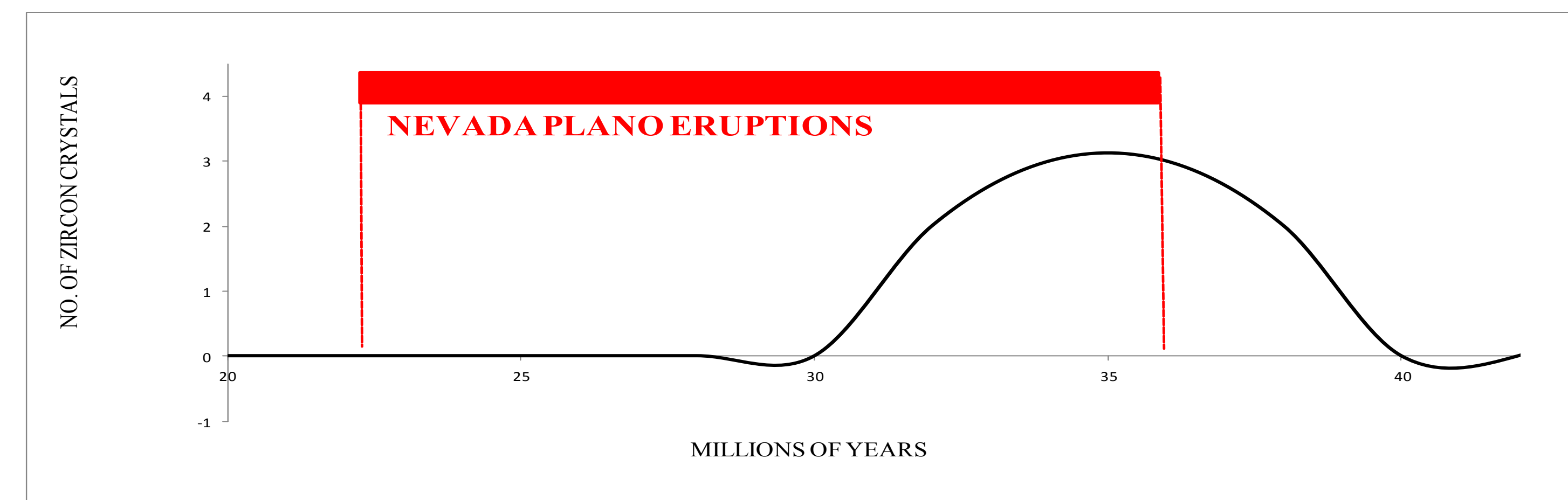
METHODS:

Previous research has been reviewed for this model and has been assessed in the context of the Bell River hypothesis.

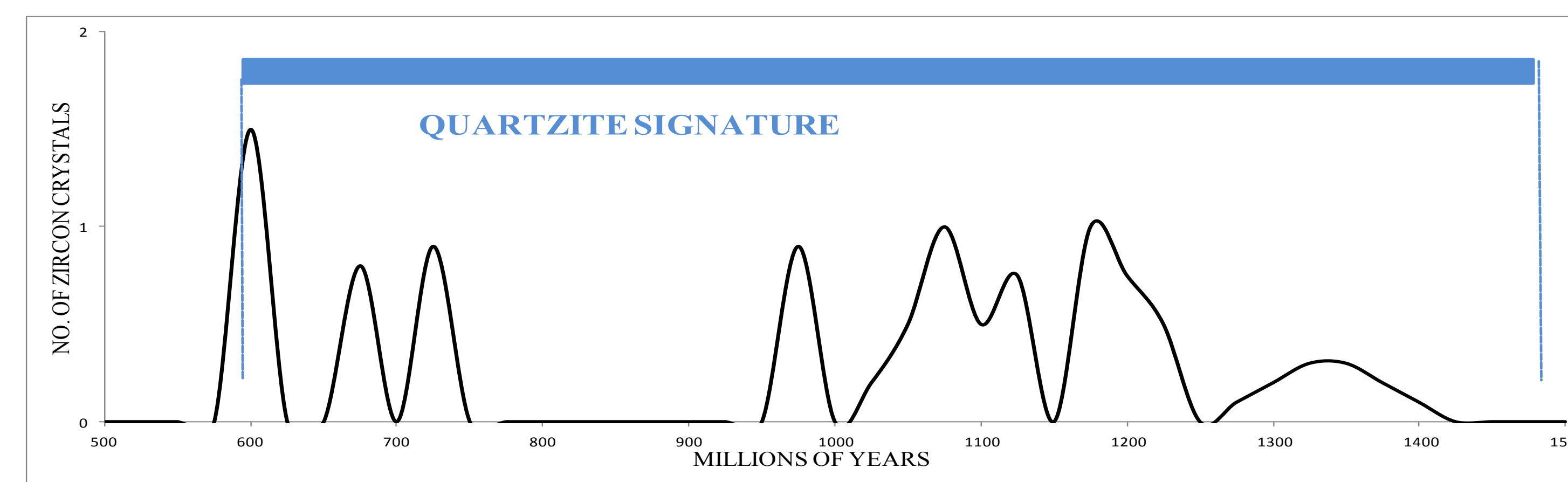
Examination of histograms generated by mass spectroscopy of Renova Formation zircon has been re-analyzed in light of the mega-caldera origin hypothesis.

The volume of the Renova Formation has been estimated and compared with a calculated volume of ash that erupted from ancient mega-calderas in Utah.

RADIOMETRIC ZIRCON DATING COMPARISON ANALYSIS:

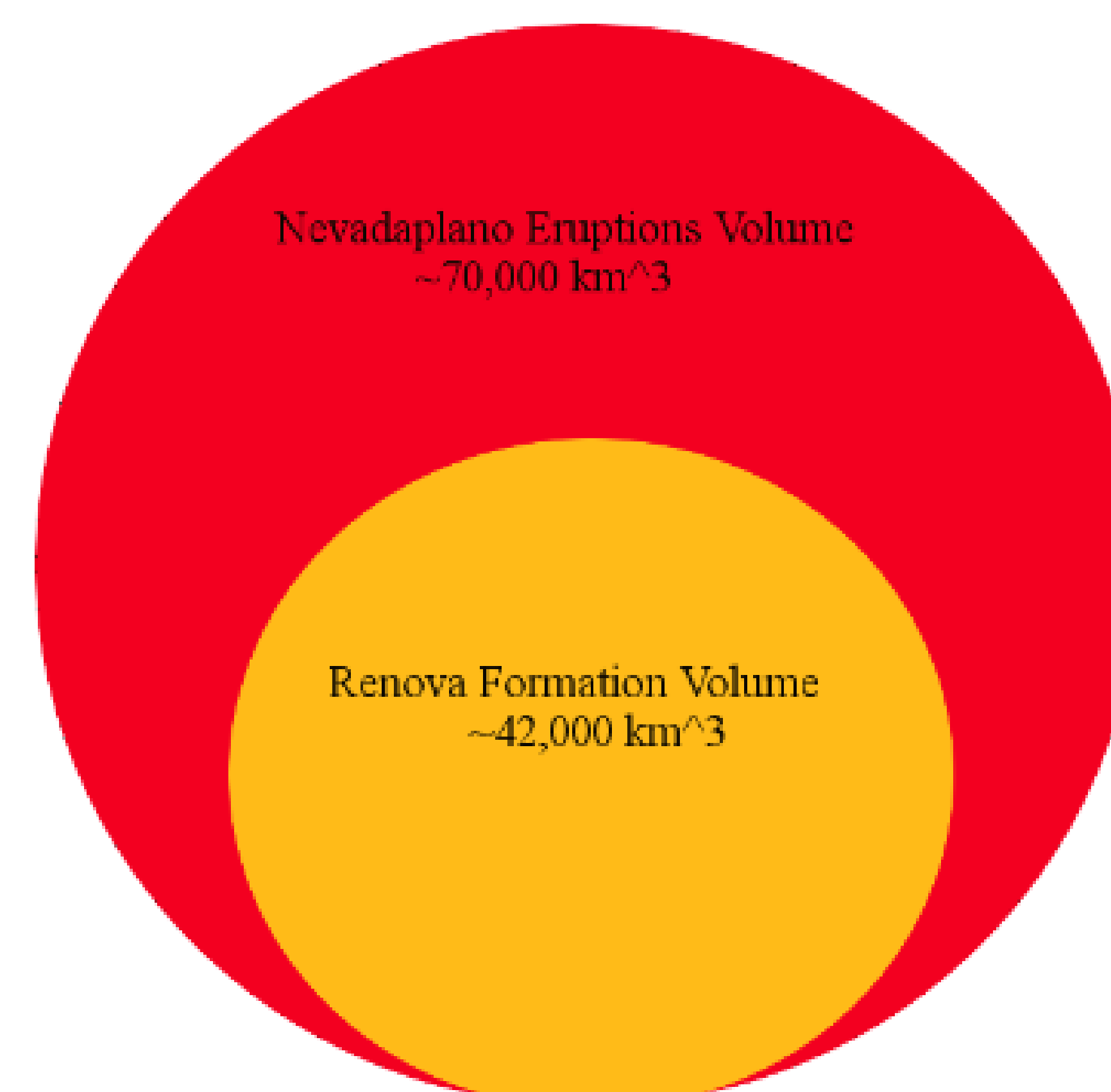


Zircon grains found in the Renova Formation correlate with the age of ash-flow tuffs that erupted from mega-calderas in southern Nevada and Utah.



Older zircons in the Renova indicate recycling of grains from Precambrian and Cambrian quartzites that have been sourced from Utah.

VOLUMETRIC COMPARISON ANALYSIS:



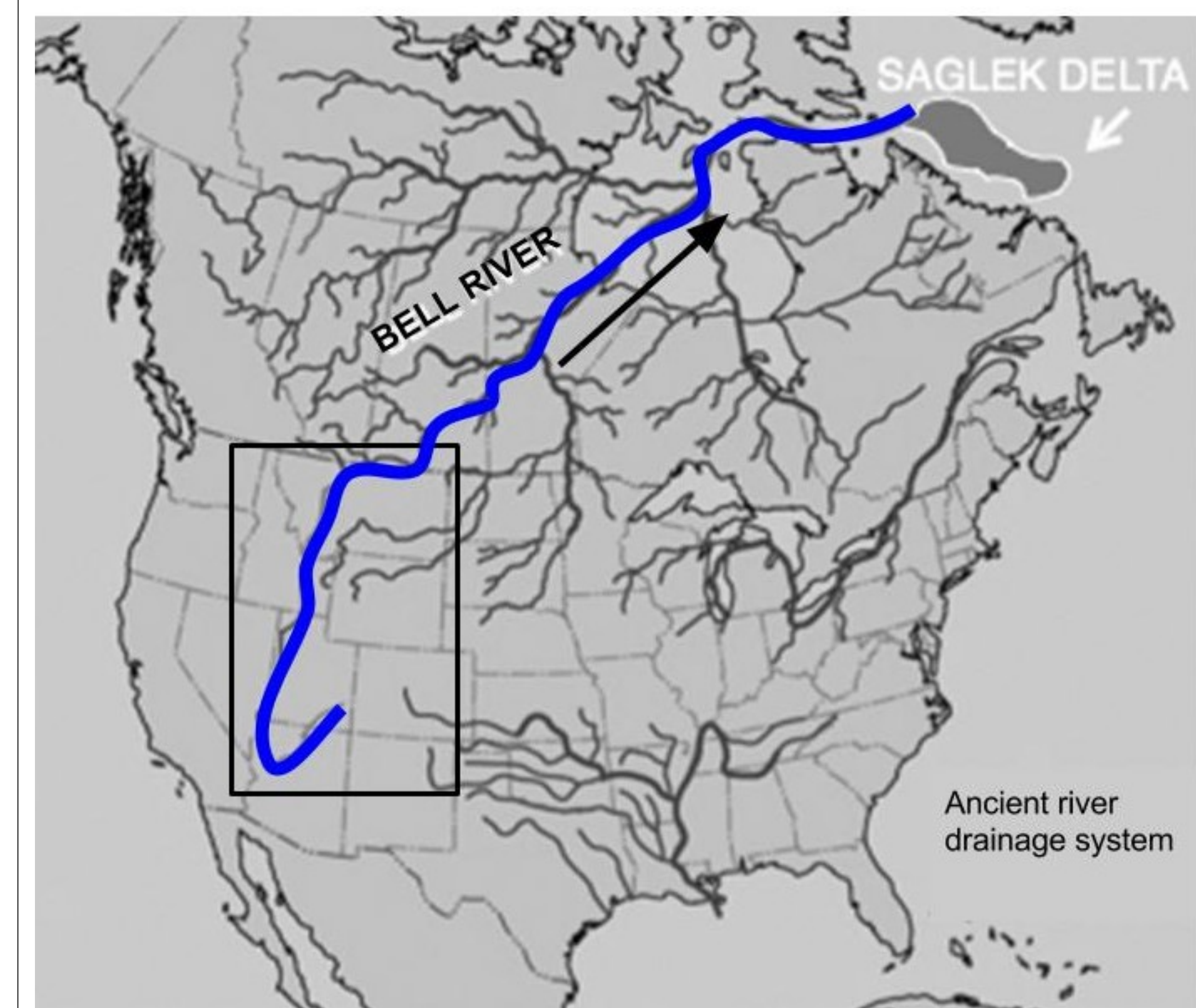
Comparing the volume of the Renova Formation with the Nevada Plano mega-calderas demonstrates that it is reasonable that these mega-calderas could be the source of the ash that comprises the Renova Formation.

IMPLICATIONS:

The radiometric zircon dating and volumetric comparison analyses provide evidence of river transport of ash and sand from Nevada and Utah into Montana.

These results are consistent with the hypothesis that a major, north-flowing Cenozoic drainage system was present in the western interior of North America before being segmented and destroyed by faulting and volcanism.

This new model provides support for the hypothesis that a southern branch of the pre-ice age Bell River, a river thought to have been the size of the Amazon, may have originated in the southern Colorado Plateau and flowed northward through Nevada, Utah, Idaho, and Montana.



References & Acknowledgements

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- We thank James W. Sears for his encouraging support in the preparation of this research. This model has been assessed in the context of his Miocene River hypothesis.